

Amendment dated September 19, 2005

After Final Office Action of September 1, 2005

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of forming a CMOS an imaging device comprising the steps of:

forming at least one in-pixel photosensor; and

forming an in-pixel capacitor in a pixel containing said photosensor and at least one periphery capacitors capacitor in a region outside of a pixel array, further comprising the steps of said in-pixel and periphery capacitors being formed at the same time using the same process steps, said process steps comprising:

forming a first electrode layer over [[said]] a substrate in a pixel region and a periphery region;

forming a first dielectric layer over said first electrode layer;

forming a second dielectric layer over said first dielectric layer; and

forming a second electrode layer over said second dielectric layer.

2. (Original) The method of claim 1, wherein said first electrode layer is formed of a material selected from the group consisting of a poly, poly/WSi, poly/WN/W, poly/silicide, poly/metal and metal.

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3. (Original) The method of claim 1, wherein said first dielectric layer and said second dielectric layer are formed of a material independently selected from the group consisting of an oxide, nitride, Al₂O₃, Ta₂O₅, BST, metal oxide and HfO_x.

4. (Original) The method of claim 1, wherein said second electrode layer is formed of a material selected from the group consisting of a polysilicon, poly/TiSi₂, poly/WSi₂, poly/WN_x/W, poly/WN_x, poly/CoSi₂, poly/MoSi₂, poly/metal and metal.

5. (Original) The method of claim 1, wherein said photosensor is one of a photodiode, photogate or photoconductor.

6. (Original) The method of claim 5, wherein said photodiode is a p-n-p photodiode.

7. (Currently Amended) A method of forming an imaging device having both single dielectric capacitors and dual dielectric capacitors, the method comprising the steps of:

forming at least one photosensor in a pixel region;

forming a first electrode layer over [[said]] a substrate in [[a]] said pixel region and a periphery region which is outside of said pixel region;

forming a first dielectric layer over said first electrode layer;

forming a second dielectric layer over said first dielectric layer;

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removing said second dielectric layer in one of said pixel region and said periphery region; and

patterning a second electrode layer in said pixel region and said periphery region, such that one of said pixel region and said periphery region comprises said first dielectric layer, and the other of said pixel region and said periphery region comprises both said first dielectric layer and said second dielectric layer.

8. (Original) The method of claim 7, wherein said first dielectric layer is different from said second dielectric layer.

9. (Original) The method of claim 7, wherein said first electrode layer is formed of a material selected from the group consisting of a poly, poly/WSi, poly/WN/W, poly/silicide, poly/metal and metal.

10. (Original) The method of claim 7, wherein said first dielectric layer and said second dielectric layer are formed of a material independently selected from the group consisting of an oxide, nitride, Al₂O₃, Ta₂O₅, BST, metal oxide and HfO_x.

11. (Original) The method of claim 7, wherein said second electrode layer is formed of a material selected from the group consisting of a polysilicon, poly/TiSi₂, poly/WSi₂, poly/WN_x/W, poly/WN_x, poly/CoSi₂, poly/MoSi₂, poly/metal and metal.

12. (Original) The method of claim 7, wherein said photosensor is one of a photodiode, photogate, or photoconductor.

13. (Original) The method of claim 12, wherein said photodiode is a p-n-p photodiode.

14. (Original) The method of claim 7, wherein removing said second dielectric layer comprises a photoresist masking process.

15. (Original) The method of claim 7, wherein removing said second dielectric layer comprises a wet or dry etch process.

16. (Original) The method of claim 7, wherein removing said second dielectric layer comprises removing said second dielectric from said pixel region.

17. (Original) The method of claim 7, wherein removing said second dielectric layer comprises removing said second dielectric from said periphery region.

18-49. (Canceled)

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50. (Currently Amended) A method of forming a ~~CMOS~~ an imaging device comprising the steps of:

forming at least one in-pixel photosensor; and

forming an in-pixel capacitor in a pixel containing said photosensor and at least one periphery capacitors capacitor in a region outside a pixel array, further comprising the steps of said in-pixel and periphery capacitors being formed at the same time using the same process steps, said process steps comprising:

forming a first electrode layer over [[said]] a substrate in a pixel region and a periphery region;

forming a dielectric layer over said first electrode layer; and

forming a second electrode layer over said dielectric layer.

51. (Previously Presented) The method of claim 50, wherein said first electrode layer is formed of a material selected from the group consisting of a poly, poly/WSi, poly/WN/W, poly/silicide, poly/metal and metal.

52. (Currently Amended) The method of claim 50, wherein said dielectric layer [[are]] is formed of a material selected from the group consisting of an oxide, nitride, Al₂O₃, Ta₂O₅, BST, metal oxide and HfO_x.

53. (Previously Presented) The method of claim 50, wherein said second electrode layer is formed of a material selected from the group consisting of a polysilicon, poly/TiSi₂, poly/WSi₂, poly/WN_x/W, poly/WN_x, poly/CoSi₂, poly/MoSi₂, poly/metal and metal.

54. (Previously Presented) The method of claim 50, wherein said photosensor is one of a photodiode, photogate or photoconductor.

55. (Previously Presented) The method of claim 53, wherein said photodiode is a p-n-p photodiode.